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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,164	03/26/2001	Hiroshi Nomura	04329.2555	7582

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EXAMINER

STOCK JR, GORDON J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,164

Applicant(s)

NOMURA, HIROSHI

Examiner

Gordon J Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 2,4,6 and 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. **Claims 1, 3, 5, and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sugaya et al. (5,754,299)**.

As for **claim 1, 3, 5, 7**, Sugaya in an inspection apparatus for an optical system comprising an illumination system and projection system discloses a step of irradiating an evaluation mark having diffraction grating patterns, a phase type wafer mark pattern, formed on a substrate with illumination light by way of the illumination optical system and observing the evaluation mark by way of the projection optical system to obtain a brightness, an intensity of the signal, and symmetric aberrations, asymmetric aberrations, telecentricity are found from the intensities and directions; normal light of the illumination is blocked by movement of the aperture stops; and beams are blocked asymmetrically relative to normal light of the illumination light; and diffracted light is generated with asymmetrically differentiated intensities (Figs. 1-12, 13, 19; cols. 13-36). As for the optical axis deviation, Sugaya mentions that symmetric, asymmetric and telecentricity are measured. Therefore, it would be obvious to one skilled in the art that optical axis displacement would be measured for symmetric, asymmetric, and telecentric aberrations are measured.

3. **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shibata et al. (6,091,075)** in view of **Takaoka (5,969,853)** and further in view of **Sugaya et al. (5,754,299)**.

As for **claims 9-10**, Shibata in a microscope with focus detection discloses: a projecting optical system, an illumination optical system; a removable and rotatable shield means, field stops (col. 7, lines 40-65; col. 8, lines 1-45; Fig. 3). As for an evaluation mark, Shibata only discloses a sample. However, Sugaya in an inspection apparatus teaches that the sample may comprise an evaluation mark, pattern, in order to inspect for focus (Figs. 13, 19, 20). Therefore, it would be obvious to one skilled in the art at the time to have the sample comprise an evaluation mark in order to inspect the focus of the system, for an evaluation mark is used for inspecting optical characteristics of a system. As for asymmetrical shield means, Shibata is silent but mentions that the aperture stop may comprise varying sizes and shapes (col. 8, lines 1-45). Takaoka in an optical microscope teaches the use of asymmetrical stops (Figs. 2a-2h; cols. 13-14) to vary contrast and light flux. Therefore, it would be obvious to one skilled in the art to have asymmetrical apertures in order to vary the contrast and light flux.

As for being in the pupil, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the stop in the pupil to since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70

4. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Shibata et al. (6,091,075)** in view of **Takaoka (5,969,853)** and further in view of **Sugaya et al. (5,754,299)** and further in view of **Nishi (5,138,176)**.

As for **claim 11**, Shibata in view of Takaoka and Sugaya disclose everything as above (see **claim 9**). They are silent concerning a mark on the stage. Nishi teaches in a projection optical apparatus that fiducial marks are on stages (Fig. 2). Therefore, it would be obvious to

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one skilled in the art at the time the invention was made to have an evaluation mark on the stage, for evaluation marks are formed on stages.

Response to Arguments

5. Applicant's arguments, see pages 4-10 of Remarks, filed June 30, 2003, with respect to the rejection(s) of claim(s) 1-11 under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection has been made. See above.

Allowable Subject Matter

6. **Claims 2, 4, 6, and 8** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to **claim 2**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of measuring the displacement of the optical axis an evaluation mark composed of at least two gratings connected together and arranged in series with each other, each having parallel bars that extend in a direction different from those of any other grating in combination with the rest of the limitations of **claims 2, 4, 6, and 8**.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 4,362,389 to Koizumi et al.

U.S. Patent 5,200,800 to Suda et al.

U.S. Patent 5,396,335 to Hasegawa et al.

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U.S. Patent 5,955,739 to Kawashima

U.S. Patent 6,163,376 to Nomura et al.

U.S. Patent 6,172,373 to Hara et al.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

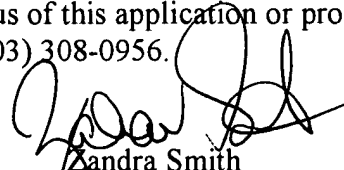
Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


gs

September 23, 2003


Zandra Smith
Primary Examiner
Art Unit 2877